

IN THE CLAIMS

1-140 (canceled)

141. (currently amended) A mixture comprising:

A) at least one electrically conductive or semiconducting compound comprising element or compound selected from the group consisting of a), b), and c), wherein the mixture comprises at least 0.5 to 60% by weight of a), wherein

a) an electrically conductive or semiconductive is at least one electrically conductive or semiconducting metallic particle having an essential content of metallic particles of at least one of tin metal or a tin alloy in an amount of from 0.5 to 60% by weight of the mixture, and at least one of b) or c), wherein;

b) is at least one electrically conductive or semiconducting polymeric compound or a mixture thereof; and

c) is at least one electrically conductive or semiconducting amine-or ammonium-containing compound;

and

B) is at least one binder;

C) is at least one crosslinking agent, a photoinitiator, or a mixture thereof whereby the content of said binder or crosslinking agent is in the range of from 16 to 42% by weight, and

D) is at least one of an organic solvent or water;

wherein the total weight of component A) is from 0.5 to 70 wt.% based on the total weight of the mixture, wherein the mixture is free of carbon black and wherein a) is capable of sliding and wherein the mixture is a liquid and is free of chromium.

142. (previously presented)A mixture according to claim 141, wherein a mixture of all electrically conductive or semiconducting particles a) has an average particle size d_{50} in the range from 0.1 to 4.0 microns.

143. (previously presented)A mixture according to claim 141, wherein a mixture of all electrically conductive or semiconducting particles a) has an average particle size d_{50} in the range from 0.2 to 4.0 microns.

144. (previously presented)A mixture according to claim 141, wherein a mixture of all electrically conductive or semiconducting particles a) has an average particle size d_{50} in the range from 0.1 to 4.5 microns.

145. (previously presented)A mixture according to claim 143, wherein said average particle size d_{50} is 3.5 microns.

146. (previously presented)A mixture according to claim 141, wherein particles A) have an average particle size d_{50} of from 0.2 to 3.5 microns.

147. (previously presented)A mixture according to claim 141 wherein particles A have an average particle size d_{50} of 0.2 microns.

148. (previously presented)A mixture according to claim 141, further comprising metallic particles of at least one of aluminum, tungsten, zinc or alloys thereof.

149. (previously presented)A mixture according to claim 141, wherein the mixture includes a reactive binder system which can substantially or completely cure on a belt installation at a temperature below 250°C PMT.

150. (previously presented)A mixture according to claim 141, wherein component a) comprises molybdenum.

151. (previously presented) A mixture according to claim 141, wherein compound b) is at least one of polyaniline, polypyrrole, polythiophene or a mixture thereof.

152. (previously presented) A mixture according to claim 141, containing at least one electrically conductive or semiconducting compound c), that is a tertiary amine, an ammonium compound or derivative thereof.

153. (previously presented) A mixture according to claim 141, comprising not more than 1.5 wt.% of wax or of substances having wax-like properties.

154. (previously presented) A process comprising applying the mixture of claim 141 to a substrate, optionally drying or at least partly crosslinking the mixture as a result of which a coating of which the average layer thickness in the dry state is not more than 6 μm , measured in the dry state microscopically on a ground cross-section, is produced on the substrate, wherein the process is chromium free, to yield a coated substrate.

155. (currently amended) A mixture comprising:

A) at least one electrically conductive or semiconducting element or compound selected from the group consisting of a), b), and c), wherein the mixture comprises 0.5 to 70% by ~~at least 0.5 to 60% by~~ weight of a), wherein

a) is at least one electrically conductive or semiconducting metallic particle having an essential content of metallic particles of at least one of tin metal or a tin alloy;

b) is at least one electrically conductive or semiconducting polymeric compound or a mixture thereof; and

c) is at least one electrically conductive or semiconducting amine-or ammonium-containing compound;

and

- B) is at least one binder;
- C) is at least one crosslinking agent, a photoinitiator, or a mixture thereof whereby the content of said binder or crosslinking agent is in the range of from 16 to 42% by weight, and
- D) is at least one of an organic solvent or water;

wherein the total weight of component A) is from 0.5 to 70 wt.% based on the total weight of the mixture, wherein the mixture is free of carbon black and wherein a) is capable of sliding and wherein the mixture is a liquid and is free of chromium, wherein the substrate is precoated.

156. (previously presented) A process according to claim 154, wherein the at least one electrically conductive or semiconducting metallic particles a) are ground by themselves.

157. (previously presented) A process according to claim 154, wherein the at least one electrically or conductive semiconducting metallic particles a) has a particle passage value d_{80} which is no greater than the layer thickness of the dry coating produced therewith.

158. (previously presented) A process according to claim 154, wherein the at least one electrically or conductive semiconducting metallic particles are ground, and over-sized particles are predominantly comminuted, so that a narrower particle size distribution arises.

159. (previously presented) A process according to claim 154, wherein the particle size passage value d_{99} of the electrically conductive or semiconducting metallic particles a) is not substantially greater than, no greater than or only slightly less than the average thickness of the coating.

160. (previously presented) A process according to claim 154, wherein the applied mixture is dried, stoved, irradiated with free radicals or heated in order to form a thoroughly crosslinked, corrosion-resistant, viscoelastic coating.

161. (previously presented) A process according to claim 154, wherein the resultant coating has a thickness of less than 6 μm .

162. (previously presented) A process according to claim 154, wherein the mixture is free or substantially free from organic lubricants.

163. (previously presented) A process according to claim 154, wherein the substrate comprises at least one metal or metal alloy.

164. (previously presented) A process according to claim 154, wherein the mixture according to the invention is applied directly to a pretreatment coating or said substrate.

165. (previously presented) The coated substrate prepared by the process of claim 154.

166. (previously presented) The coated substrate of claim 165, wherein the substrate is metal also.

167. (previously presented) A process according to claim 154, wherein said mixture is free from at least one of PTFE, silicone, inorganic acids, silicone oil, organic acids, heavy metals, arsenic, lead, cadmium, chromium, cobalt, copper or nickel.

168. (previously presented) A process according to claim 154, wherein said substrate comprises at least one of aluminum, iron, magnesium or steel.

169. (previously presented) The mixture of claim 141, wherein a) is tin metal.

170. (previously presented) The mixture of claim 141, wherein a) is tin alloy.

171. (previously presented) The mixture of claim 141, further comprising E) at least one component chosen from d), f) or g), wherein

d) is at least one post-crosslinking compound,

f) is at least one corrosion protection pigment based on a silicate, whereby the corrosion protection pigments have an average particle size d_{50} in the range from 0.01 to 5 micron; and

g) at least one of corrosion inhibitor which are not present in particle form.

172. (previously presented) A mixture comprising:

A) at least one electrically conductive or semiconducting element or compound selected from the group consisting of a), b), and c), wherein the mixture comprises at least 0.5 to 60% by weight of a), wherein

a) is at least one electrically conductive or semiconducting metallic particle having an essential content of metallic particles of at least one of tin metal or a tin alloy;

b) is at least one electrically conductive or semiconducting polymeric compound or a mixture thereof; and

c) is at least one electrically conductive or semiconducting amine-or ammonium-containing compound;

and

B) is at least one binder;

C) is at least one crosslinking agent, a photoinitiator, or a mixture thereof whereby the content of said binder or crosslinking agent is in the range of from 16 to 42% by weight, and

D) is at least one of an organic solvent or water;

wherein the total weight of component A) is from 0.5 to 70 wt.% based on the total weight of the mixture, wherein the mixture is free of carbon black and wherein a) is capable of sliding and wherein the mixture is a liquid and is free of chromium, wherein said post-crosslinking compound d) is selected from the group consisting of isocyanate, blocked isocyanate, isocyanurate and a melamine resin.

173. (previously presented) A mixture according to claim 171, wherein the sum of the weight content of a) relative to the sum of the total pigmentation $\Sigma((a) + (f))$ is 30 to 99 wt.%.

174. (previously presented) A mixture according to claim 171, wherein the corrosion protection particles f) have an average particle size d_{50} of 5 μm .

175. (previously presented) A mixture according to claim 171, wherein the corrosion protection particles f) have the particle size passage value d_{80} in the range from 0.03 to 6 μm .

176. (previously presented) The mixture of claim 141, wherein the metal particles selected from the group consisting of tungsten, tantalum and niobium or an alloy thereof.

177. (previously presented) A process comprising the steps of:

applying the mixture of claim 176 to a substrate; and

drying or at least partly crosslinking the mixture to yield a coated substrate having, wherein the dry coating on the substrate has an average layer thickness in the dry state of not more than 6 μm , measured microscopically on a ground cross-section, and wherein the process is chromium free.